

Claims

[1] A light wave radar apparatus comprising:

a light emitting means for emitting a light signal;

an optical guide means for propagating the light signal
5 emitted out of said light emitting means;

a light transmit-receive means for emitting the light
signal propagated by said optical guide means toward a space,
and for collecting scattered light resulting from a scattering
of the light signal by the space;

10 a wind velocity calculating means for combining a part
of the light signal emitted out of said light emitting means
and the scattered light collected by said light
transmit-receive means to generate combined light, and for
calculating a wind velocity in a sight line direction from the
15 combined light; and

a frequency deviation detecting means for detecting a
frequency deviation of the light signal emitted out of said
light emitting means.

[2] The light wave radar apparatus according to Claim 1,
20 characterized in comprising a wind velocity correcting means
for correcting the wind velocity calculated by the wind velocity
calculating means according to the frequency deviation detected
by the frequency deviation detecting means.

[3] The light wave radar apparatus according to Claim 1,
25 characterized in that the frequency deviation detecting means
detects the frequency deviation from the light signal
propagated by the optical guide means.

[4] The light wave radar apparatus according to Claim 1,
characterized in that the frequency deviation detecting means
30 combines a part of the light signal emitted out of the light

emitting means and a part of the light signal propagated by the optical guide means to generate combined light, and detects the frequency deviation of the light signal from the combined light.

[5] The light wave radar apparatus according to Claim 1, characterized in that the frequency deviation detecting means combines a part of the light signal emitted out of the light emitting means, and a light signal reflected by an internal reflection point between the optical guide means and the light transmit-receive means to generate combined light, and detects the frequency deviation of the light signal from the combined light.

[6] The light wave radar apparatus according to Claim 1, characterized in that the frequency deviation detecting means detects an intensity of the light signal propagated by the optical guide means, and detects the frequency deviation of the light signal from a temporal change in the intensity of the light signal.

[7] The light wave radar apparatus according to Claim 1, characterized in that the frequency deviation detecting means has a table for storing frequency deviations corresponding to a plurality of light signals having different pulse shapes, and reads a frequency deviation corresponding to the light signal propagated by the optical guide means from the table.

[8] The light wave radar apparatus according to Claim 1, characterized in that a transmission path of the optical guide means has a propagation length which is smaller than a reference value which is determined by an allowable error of the frequency deviation of the light signal, an effective core area and a nonlinear refractive index of said transmission path, and an oscillation frequency and an intensity of the light signal.

[9] The light wave radar apparatus according to Claim 1, characterized in that a transmission path of the optical guide means has an effective core area which is larger than a reference value which is determined by a nonlinear refractive index of the transmission path, an oscillation frequency and an intensity of the light signal, and an allowable error of the frequency deviation of the light signal.